Continental, Adelphia Communications and possibly Maclean Hunter Cable Television and Comcast Corp.: The three MSO's concluded a deal in 1992 to establish a CAP network in Palm Beach County, Fla.[56]

ii. Cable/Telco relationships:

US West/Time Warner, Inc.: The RBOC bought a 25% stake in the MSO through $2.5 billion in cash and notes in December of 1993. Roughly $1 billion of US West's investment was targeted to accelerate the building of full-service networks on Time Warner Cable systems in 25 major metropolitan areas. The two companies will share equally in the design, implementation, and direction of the full-service networks, which will accommodate a wide range of services including telephony. The two firms have combined sales of over $32 billion.[57]

BellSouth/Prime Management: The RBOC announced a $250 million investment to buy 22.5 percent of the nation's 23rd largest cable operator in October, 1993, to pursue interactive media and telecommunications opportunities, including alternate phone service for business and residential customers. Prime manages cable TV systems with more then 500,000 customers.[58]

Southwestern Bell/Hauser Communications: Southwestern Bell purchased cable franchises in Arlington County, Virginia and Montgomery County, Maryland from Hauser Communications. This acquisition makes it possible for Southwestern Bell to gain access to Bell Atlantic local service customers through the cable companies' facilities. The Arlington County and Montgomery franchises serve over 200,000 households.

iii. IXC/Other:

AT&T/McCaw: The IXC announced a $12.6 billion plan to acquire the cellular provider, which competes directly with BOC cellular subsidiaries in August of 1993. McCaw had pieced together rights to spectrum capable of carrying voice and data to create the nucleus of a seamless network stretching from Florida to the Pacific Northwest since 1991. A factor in the IXC's bid was that the cellular provider owned more than 50% of LIN, a wireless communications and broadcasting conglomerate. McCaw had an option to buy the remainder of LIN but did not have the funds to do so - until AT&T came along. The three firms have combined sales of

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[56] "In Teleport's Shadow," p.31.

[57] "US West's Deficit Spending," *Cablevision*, February 28, 1994, & Edge, May 24, 1993.

[58] *State Telephone Regulation Report*, October 21, 1993.

over $82 billion.[59] The deal is still pending while waiting for approval of an AT&T request for a waiver of the MFJ.

MCI/Western Union: The IXC purchased underground conduits laid by Western Union Advanced Transmission Services for less than $30 million in 1990. MCI has announced new plans to offer alternative access services. Parts of MCI's $2 billion planned alternative to the local phone networks will be built using the Western Union conduits as the backbone of a network for more than 2,000 buildings in more than 200 cities.[60]

MCI/British Telecom: The British telephone provider agreed to invest $4.3 billion for a 20% stake in the IXC in June, 1993. MCI has used $800 million of the investment to pay down debt and has the ability to use the remainder for whatever it pleases. MCI is creating MCI Metro, a wholly-owned subsidiary that will invest in switching equipment needed to provide local phone services without going through the regional Bell systems. In late 1992, MCI organized a consortium of more than 250 cable, CAP, and independent local phone companies to develop a national PCS network. MCI reportedly intends to spend $10 billion over the next decade to build a PCS system that will cover 90 percent of the population. The two companies have combined revenues of $30.4 billion.[61]

MCI/Nextel: MCI announced plans to spend $1.3 billion to buy 17 percent of Nextel, which is developing local digital wireless service, in March, 1994. The service is expected to be integrated with Network MCI, the company's multimedia communications venture. MCI plans to offer the digital wireless service in the nation's top 10 markets within a year. The two firms have combined sales of over $18.6 billion.[62]

MCI/Jones Cable/Bell Canada: In December 1993, Bell Canada announced plans to pay $400 million for 30 percent of Jones Intercable, with an option to gain a controlling interest within the next eight years.[63] MCI has recently announced that it plans to test phone service over the Jones cable network in Alexandria, Virginia.

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[59] Bear, Stearns & Co., Inc., Company Report No. 1157367, McCaw Cellular, December 27, 1991, "Speculating on Spectrum," *Cablevision*, September 20, 1993 & "Mega-merger Mania," *Network World*, October 25, 1993.

[60] "Old Tubes for MCI," *The New York Times*, Wednesday, January 5, 1994

[61] "MCI Unveils Its Plan to Upgrade Networks and Battle Baby Bells," Wall Street Journal, January 5, 1994 & "Old Tubes for MCI," *New York Times*, Wednesday, January 5, 1994.

[62] "Cable Deal is Possibility: MCI Goes for "Now" Wireless Technology for Nationwide Network," *Communications Daily*, March 1, 1994.

[63] *The Geodesic Network II*, 1992, p.26.

iv. Wireless:

TCI/McCaw Cellular: The MSO and cellular provider tested PCS through a joint venture in Ashland, Oregon in 1992. None of the test customers were cellular subscribers, and the most popular of the two services McCaw and TCI offered was one that essentially copied cellular service by letting people make phone calls from anywhere in town. Sources say the test indicates that a two-way PCS extension of cellular substantially improves cellular's overall revenue performance.[64]

McCaw Cellular Corp./GTE Corp. Roaming Agreements: The two cellular providers have negotiated roaming agreements, which pertain to the tracking and billing of cellular services for users who are outside their carrier's service area. McCaw said it would activate Cellular Digital Packet Data (CDPD) services, which allow for high speed data transmission, in 105 major cities by the end of 1994. GTE and allied companies such as Ameritech and Bell Atlantic will provide local CDPD service to 77 cities by year end.[65]

McCaw/Microsoft: In 1990, Teledesic Corporation began a partnership with the cellular provider to set up a network of hundreds of satellites for worldwide communications. McCaw had the clout to arrange the international partnerships such a concept would require and to finance the construction and launching of 840 satellites. McCaw bought a 27.8% stake for $3.7 million. The seed capital went to hire engineers to develop detailed specifications. In early 1994, with the FCC deadline to file for the required 28-gigahertz radio band nearing, Teledesic needed more cash and contacted Microsoft chairman Bill Gates. Microsoft and McCaw each put up $5 million for 30% stakes.[66]

Microsoft/Wireless: Bill Gates agreed to invest $30 million of Microsoft's money, and $10 million of his own, in Nationwide Wireless Network, Inc., a $150 million joint venture with Mobile Telecommunications Technologies Corp., to build a giant messaging service in early 1994.[67]

As is demonstrated above, AT&T, MCI and Teleport have created ventures that together represent a potent competitive force in telecommunications services. Figures B-9a & B-9b illustrate the potential ability of AT&T and MCI to provide end-to-end services to consumers, whether it be information transmitted by PCS, cellular telephony, cable, or fiber optics. These cooperative relationships have special competitive significance when they involve, as they often do, complementary assets and resources. The AT&T-based alliance spans telecommunications equipment and

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[64] "PCS Test Spots," *Cablevision*, March 22, 1993 & "From Blueprint to Reality," *Cablevision*, November 16, 1992.

[65] "GTE to Join McCaw in Cellular Rollout," *InfoWorld*, November 22, 1993.

[66] "He's No Mere Satellite-Gazer," *Business Week*, April 4, 1994.

[67] "He's No Mere Satellite-Gazer."

services, and wireline and wireless telecommunications services. It has enormous financial, human and technical resources and one of the best known name brands in the US. The BT-MCI based alliance includes global and domestic interexchange services, cable and wireless interests and strong relationship with many competitive access providers. MCI is, by itself, a $10.5 billion company, but in addition has access to the huge financial resources of BT (formerly British Telecom).

As shown in Figure B-9c, Teleport is a joint venture owned by the nation's largest cable MSOs (multiple system operators). In addition to providing competitive access services and, soon, exchange services, Teleport is clearly being positioned as a means of interconnecting cable systems in metropolitan areas, enhancing the viability and attractiveness of regional cable networks. Teleport thus illustrates a fundamental point in assessing competition in telecommunications services. Instead of assessing only the competitiveness of a single firm or mode of communications, it is crucial to weigh the potential competition of logical combinations of the firms and modes.

d. Conclusion

Therefore, LECs, through the entry of individual firms and alliances, will be faced with ever increasing competition for telephony services. New competitors have significant financial and physical assets with which to effectively compete. This competition will encompass the full range of services currently provided by LECs, as well as the new services made possible by ongoing technological change in the provision of telephony services.

Table B-1:
LEC 1992 Operating Revenue by Type of Service

($ millions)	Local Service	Long Distance	Network Access	Other	Total
Ameritech	5,012	1,252	2,654	2,235	11,153
Bell Atlantic	4,892	1,556	2,953	3,246	12,647
BellSouth	6,236	1,249	3,817	3,899	15,201
GTE	5,000	3,396	4,477	2,989	15,862
NYNEX	6,308	1,113	3,356	2,378	13,155
Pacific Telesis	3,377	2,103	2,250	2,205	9,935
Southwestern Bell	4,668	1,012	2,548	1,788	10,016
US West	3,674	1,420	2,720	2,467	10,281
Totals:	39,167	13,101	24,775	21,207	98,250

Network Access as a % of Total Operating Revenue

Ameritech	23.8%
Bell Atlantic	23.3%
BellSouth	25.1%
GTE	28.2%
NYNEX	25.5%
Pacific Telesis	22.6%
Southwestern Bell	25.4%
US West	26.5%
Total	25.2%

Source: Company Annual Reports

Figure B-2a

Business Telephone Revenues

Washington

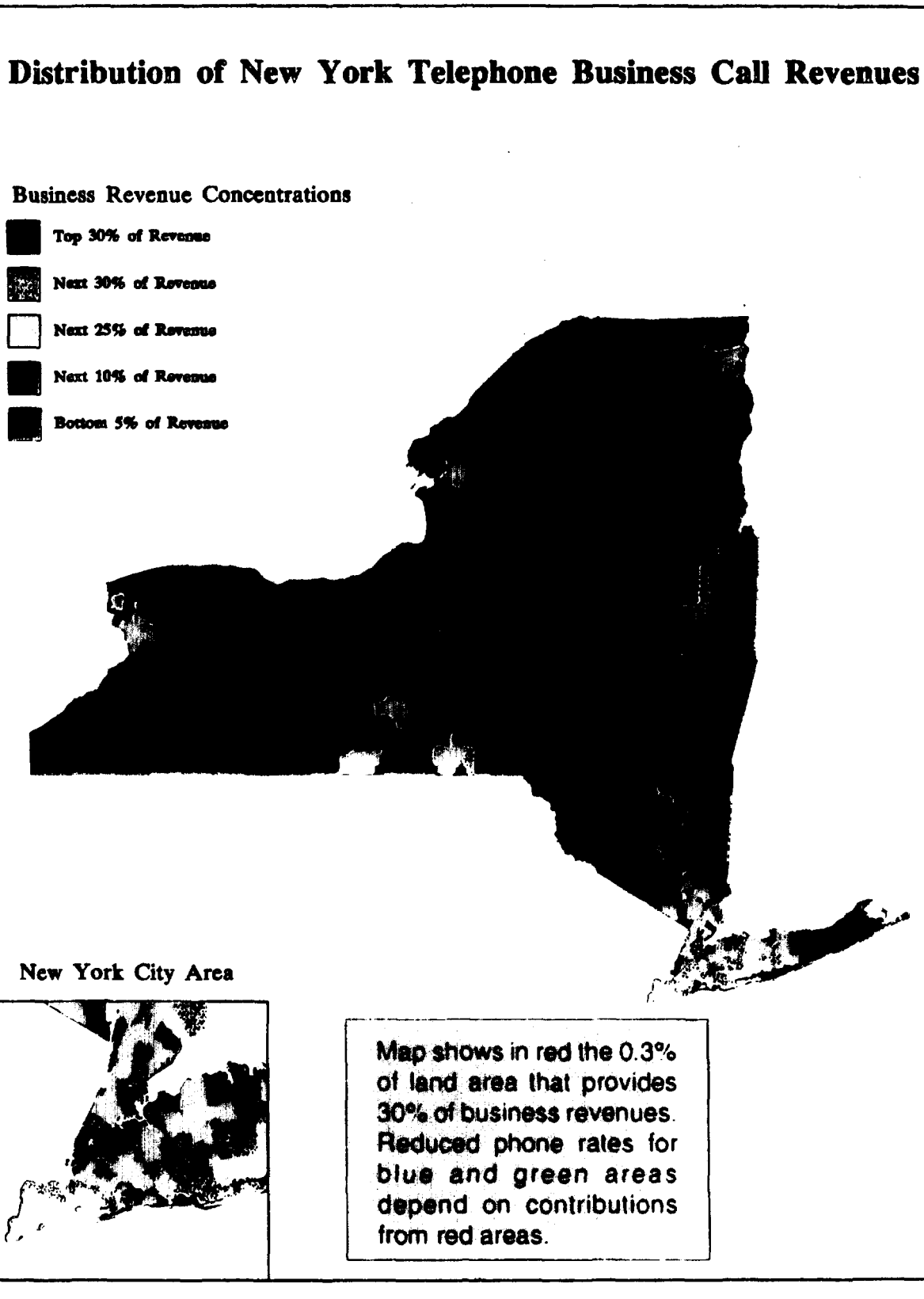
U S West provides affordable, universal service across most of Washington. Map shows in red the 0.1% of land area that provides 30% of business revenues. Profits from the few high-density areas support low rates across the rest of the state.

Business Revenue

- Top 30% of Revenue
- Next 30% of Revenue
- Next 25% of Revenue
- Next 10% of Revenue
- Bottom 5% of Revenue

Figure B-2b

Distribution of New York Telephone Business Call Revenues



Map shows in red the 0.3% of land area that provides 30% of business revenues. Reduced phone rates for blue and green areas depend on contributions from red areas.

Figure B-2c

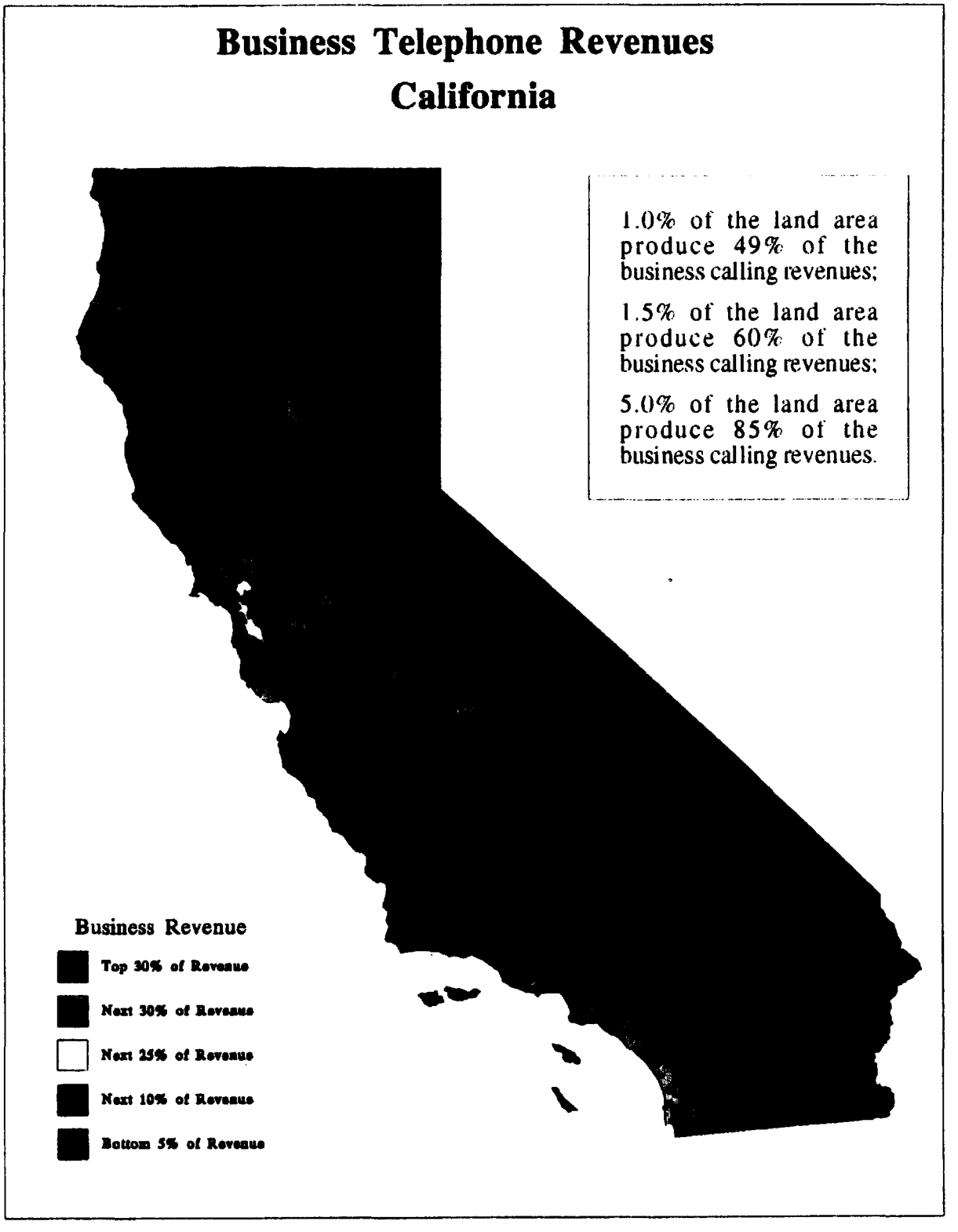

Business Telephone Revenues
California
1.0% of the land area produce 49% of the business calling revenues;
1.5% of the land area produce 60% of the business calling revenues;
5.0% of the land area produce 85% of the business calling revenues.
Business Revenue
Top 30% of Revenue
Next 30% of Revenue
Next 25% of Revenue
Next 10% of Revenue
Bottom 5% of Revenue

Table B-3:

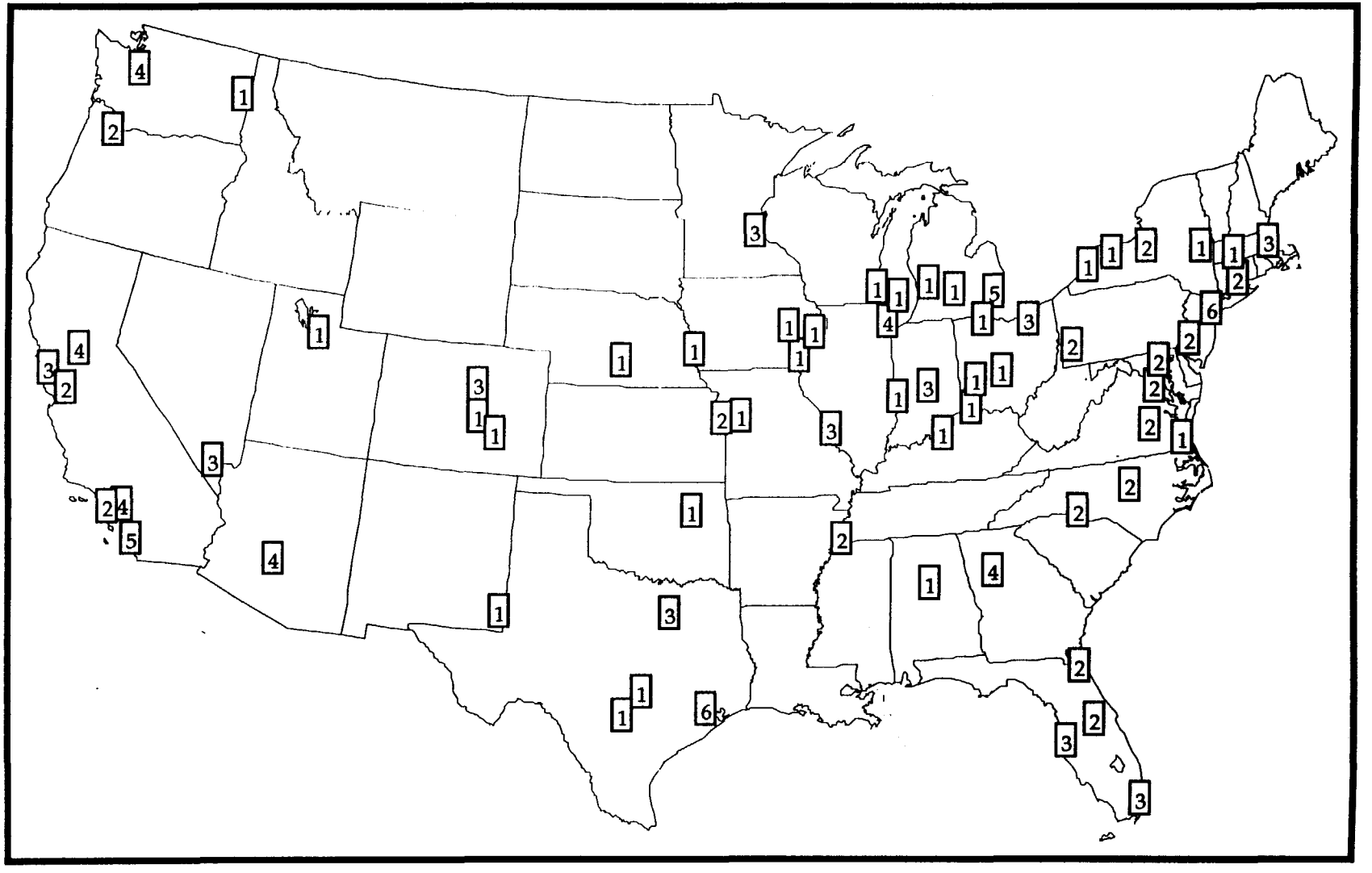
Markets Served by MFS and Teleport

	MFS	Teleport
Current	19	13
Planned	11	5
Total	30	18

Sources: The Yankee Group, 1993; Telco Competition Reports
Calls to State PUCs/PSCs, CAP Promotional Materials,
Local Competition and Regulation, Geodesic Network II

Figure B-3: U.S. Competitive Access Provider Network Locations

(Number in box indicates number of operational CAPs networks in city or MSA as of April 1994)*



*Does not include networks under construction.

Sources: Connecticut Research, 1994, The Geodesic Network II, The Yankee Group, Telco Competition Report, Local Competition and Regulation 1993.

Table B-4: CAP Market Summary by City

(Operational CAP networks as of April 1994)

State	City	CAP
Alabama	**Andalusia**	Deltacom
	Birmingham	Metrex
	Dothan	Deltacom
	Huntsville	Metrex
	Ozark	Deltacom
Arizona	**Phoenix**	IntelCom Group
		City Signal
		Teleport
		Electric Lightwave
California	**Anaheim**	Linkatel
	Los Angeles	Linkatel
		MFS
		Teleport
		IntelCom Group
		ACLA
	Los Gatos	Bay Area Transport
	Mid-Wilshire	Linkatel
	Morgan Hill	Bay Area Transport
	Navota	Linkatel
	Rancho Cordova	Phoenix Fiberlink
	Sacramento	Electric Lightwave
		IntelCom Group
		Digital Direct
		Phoenix FiberLink
	San Diego	Teleport
		Linkatel Communications
		Electric Lightwave
		Time Warner AxS
		Fibrcom
	San Francisco	MFS
		Teleport
		IntelCom Group
	San Jose	MFS
		IntelCom Group

Table B-4: CAP Market Summary by City

(Operational CAP networks as of April 1994)

State	City	CAP
California (cont.....)	Santa Barbara	Wiltel
		SP Telecom
	Santa Monica	Linkatel
		IntelCom Group
		ACLA
Colorado	Boulder	IntelCom Group
	Colorado Springs	IntelCom Group
	Denver	IntelCom Group
		Jones Lightwave
		MFS
	Fort Collins	IntelCom Group
	Pueblo	IntelCom Group
Connecticut	Hartford	MFS
	Menden	American Lightwave
Delaware	Wilmington	Delaware Lightwave (MFS)
District of Columbia	Washington, D.C.	MFS
		LOCATE
Florida	Clearwater	Florida Digital Media Partners
	Hillsborough	Tampa Electric Company
	Jacksonville	AlterNet
		Intermedia
		Hyperion Telecom
	Manatee	Tampa Electric Company
	Melbourne	FiberCap
	Miami	MFS
		Teleport
		Intermedia
	Orlando	Intermedia
		Time Warner AxS
	Sarasota	Tampa Electric Company

Table B-4: CAP Market Summary by City

(Operational CAP networks as of April 1994)

State	City	CAP
Florida (cont.....)	**St. Petersburg**	Jones Lightwave
		Wiltel
		Paragon Cable
		Florida Power Corp.
		Intermedia
	Tampa	Jones Lightwave
		Tampa Electric Company
		MFS
		Intermedia
Georgia	**Atlanta**	Jones Lightwave
		MFS
	Augusta	Jones Intercable
	Manatee/Hillsboro	Jones Intercable
Hawaii	**Honolulu**	State of Hawaii (with Oceanic Cable)
	Oahu	State of Hawaii (with Oceanic Cable)
		Digital Transport
Illinois	**Chicago**	MFS
		Teleport
		LOCATE
		United Communications Systems
Indiana	**Indianapolis**	MFS
		City Signal
		Indiana Digital Access
	Terre Haute	Indiana Digital Access
Iowa	**Cedar Rapids**	MCLEOD Telemanagement
	Des Moines	MWR Telecom
	Iowa City	MCLEOD Telemanagement
Kansas	**Wichita**	Multimedia Hyperion

Table B-4: CAP Market Summary by City

(Operational CAP networks as of April 1994)

State	City	CAP
Kentucky	**Glasgow**	Municipal Government Glasgow, KY
	Lexington	Quest Engineers, Inc.
	Louisville	Americall
Louisiana	**New Orleans**	Two Way Com
		LA FiberNet
		MFS
Maryland	**Baltimore**	Baltimore G & E
		MFS
		LOCATE
Massachusetts	**Boston**	MFS
		Teleport
		LOCATE
	Cambridge	MFS
		Teleport
	Springfield	Brooks
		FiveCom
Michigan	**Ann Arbor**	City Signal
		Access Transmission
	Detroit	Teleport
		Access Transmission
		U.S. Signal
		LOCATE
		City Signal
	Grand Rapids	City Signal
	Lansing	City Signal
Minnesota	**Minneapolis-St. Paul**	MFS
		FibrCom
		Continental Cable

Table B-4: CAP Market Summary by City

(Operational CAP networks as of April 1994)

State	City	CAP
Missouri	**Independence**	K.C. FiberNet
	Kansas City	K.C. Fibernet
		MFS
	Springfield	Springfield Fibernet
	St. Louis	TCG America
		MFS
		F.A.S.T.
		Teleport
Nebraska	**Kearney**	Cable One
	Omaha	Teleport
Nevada	**Las Vegas**	Electric Lightwave
		City Signal
		Community CATV of L.V.
New Jersey	**Camden**	Eastern Telelogic
	Newark	MH Lightnet
		MFS
		Teleport
		LOCATE
New Mexico	**Hobbs**	Eastern New Mexico Co-op
New York	**Albany**	MFS
	Buffalo	MFS
	Long Island	Cablevision
	New York	MFS
		Teleport
		LOCATE
		Cablevision Lightpath
		Time Warner AxS
	Rochester	MFS
	Syracuse	Hyperion
		MFS

Table B-4: CAP Market Summary by City

(Operational CAP networks as of April 1994)

State	City	CAP
North Carolina	**Charlotte**	IntelCom Group
		Time Warner AxS
	Raleigh-Durham	Time Warner AxS
		FibrCom
Ohio	**Akron**	IntelCom Group
		MetroComm AxS
	Cincinnati	Ohio Linx
		Western Union
		IntelCom Group
		Time Warner AxS
	Cleveland	MFS
		MetroComm AxS
		IntelCom Group
	Columbus	MetroComm AxS
	Dayton	IntelCom Group
	Medina	Ohio Linx
	Toledo	IntelCom Group
Oklahoma	**Broken Arrow**	Public Service of Oklahoma/Metrolink
	Oklahoma City	Dobson Fiber
		Cox Cable
	Tulsa	PSO Metrolink
		Public Service of Oklahoma/Metrolink
Oregon	**Portland**	Electric Lightwave
		Pac-Net
Pennsylvania	**Carlisle**	Valleynet
	Chambersburg	Valleynet
	Philadelphia	MFS
		Eastern Telelogic
	Pittsburgh	TCI/Penn Access
		MFS
	Stephens City	Valleynet

Table B-4: CAP Market Summary by City

(Operational CAP networks as of April 1994)

State	City	CAP
Rhode Island	**Providence**	Teleport
		FiveCom
South Carolina	**Charleston**	PalmettoNet
	Charlotte	MPX Inc.
	Columbia	MPX Inc.
	Florence	PalmettoNet
	Myrtle Beach	PalmettoNet
	Savannah	PalmettoNet
	St. George	PalmettoNet
	Sumter	PalmettoNet
	Waterboro	PalmettoNet
	Yemassee	PalmettoNet
Tennessee	**Louisville**	IntelCom Group
	Memphis	City Signal
		Time Warner AxS
Texas	**Austin**	Time Warner AxS
	Dallas	Phonoscope
		Fibercom/Paragon Cable
		MFS
		Teleport
	Houston	Phonoscope
		Fibercom/Paragon Cable
		Time Warner AxS
		MFS
		Teleport
		Houston Power & Light
	League City	Houston Light & Power
	Nassau Bay	Houston Light & Power
	Richmond	Hyperion Tel. Inc/Penn Access
	San Antonio	Fibercom/Paragon Cable
Utah	**Salt Lake City**	Questar Telecom
		Electric Lightwave

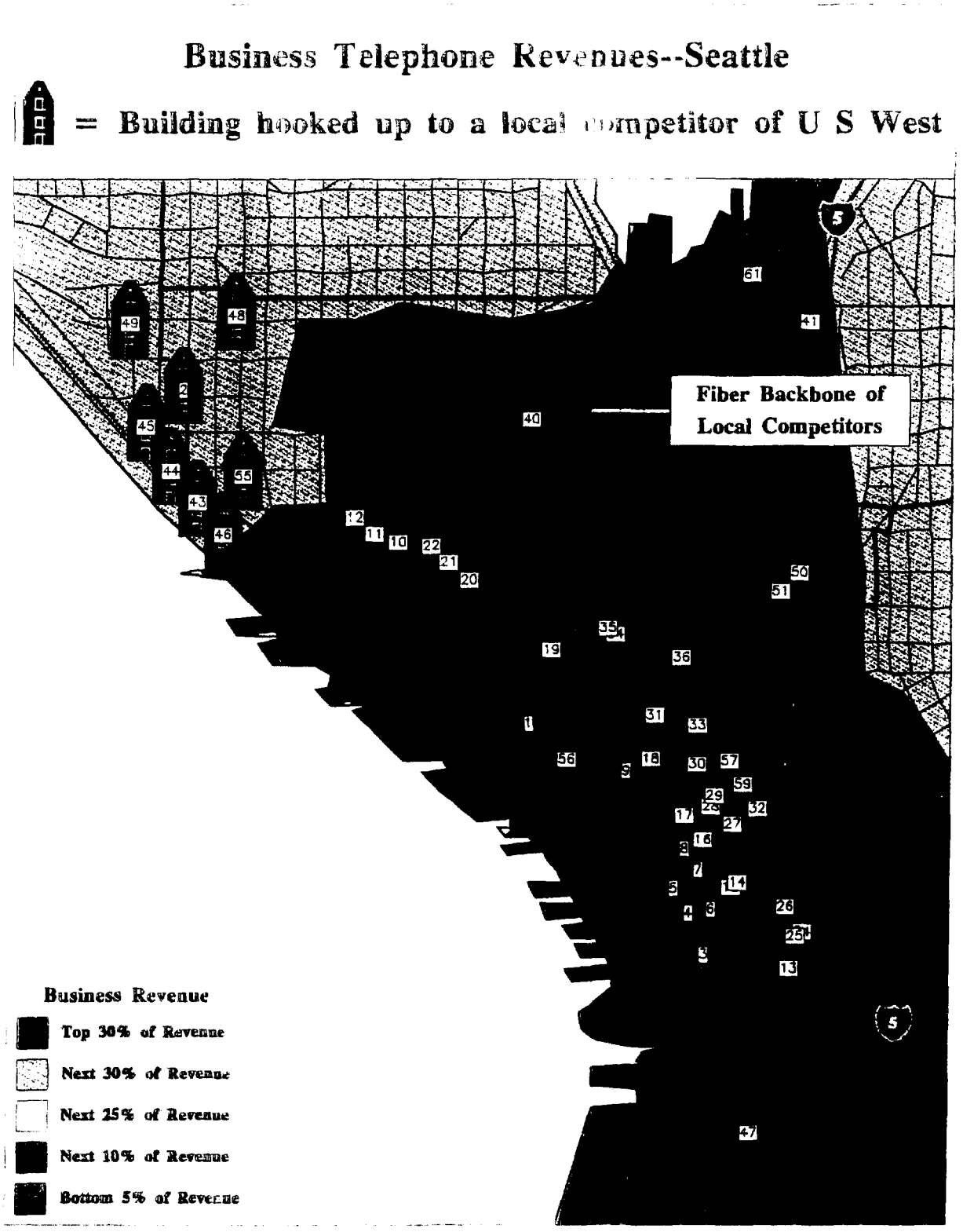
Table B-4: CAP Market Summary by City

(Operational CAP networks as of April 1994)

State	City	CAP
Virginia	**Richmond**	AlterNet of Va.
		Virginia Metrotel Inc.
Washington	**Kennewick**	Northwest Microwave
	Seattle	Digital Direct
		Teleport
		Electric Lightwave
		PacNet
		MFS
	Spokane	Electric Lightwave
	Wenatchee	Northwest Microwave
Wisconsin	**Kenosha-Racine**	Teleport
	Milwaukee	Teleport

Sources: Connecticut Research (1994), The Geodesic Network II (1992), The Yankee Group Report (1992), Telco Competition Report (various dates), Local Competition and Regulation (1993)

Figure B-4.a


Business Telephone Revenues--Seattle
= Building hooked up to a local competitor of U S West
Fiber Backbone of Local Competitors
Business Revenue
Top 30% of Revenue
Next 30% of Revenue
Next 25% of Revenue
Next 10% of Revenue
Bottom 5% of Revenue

THE CAP's NETWORKS COMPREHENSIVELY COVER MANHATTAN...

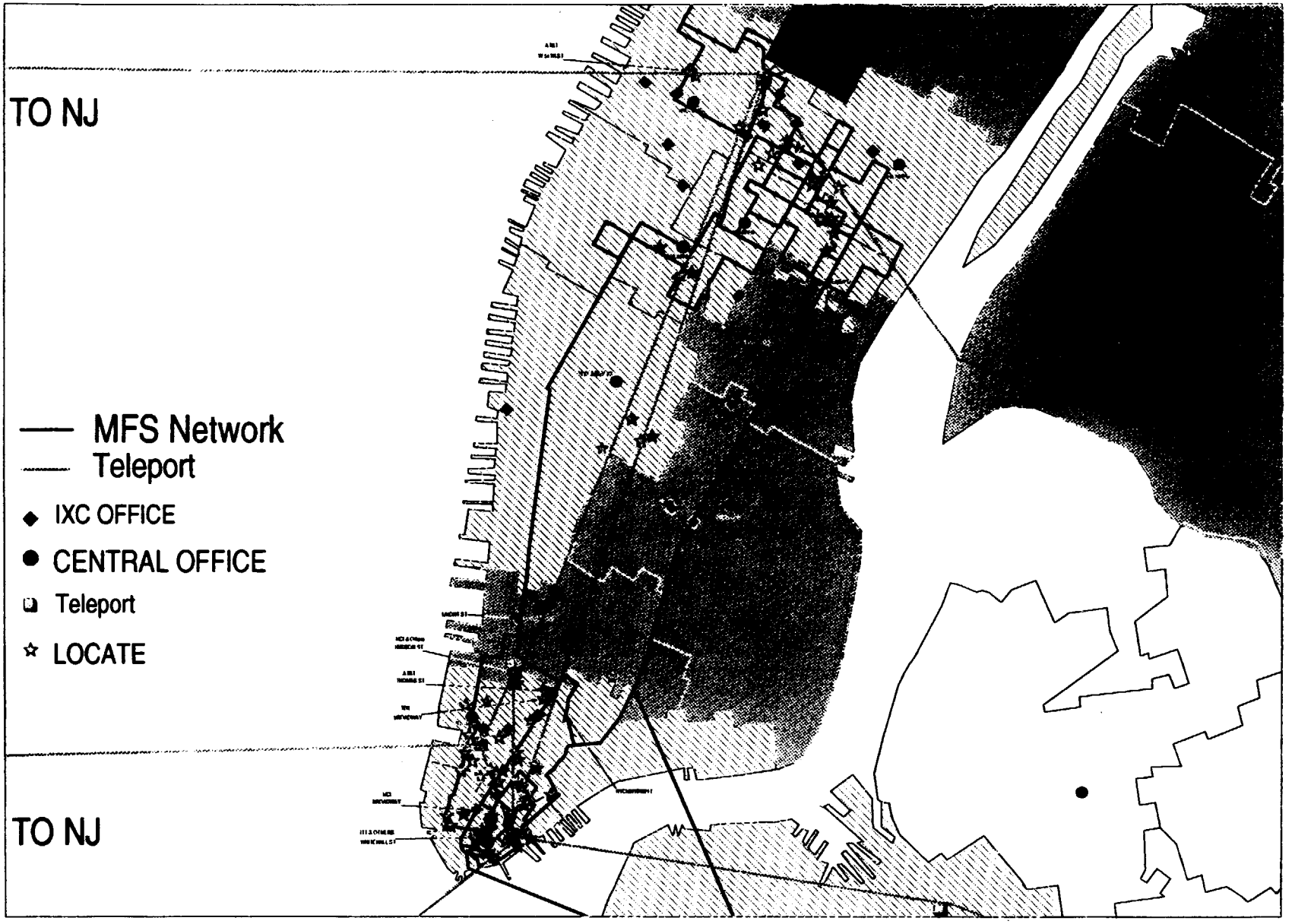


Figure B-4b

Figure B-4c

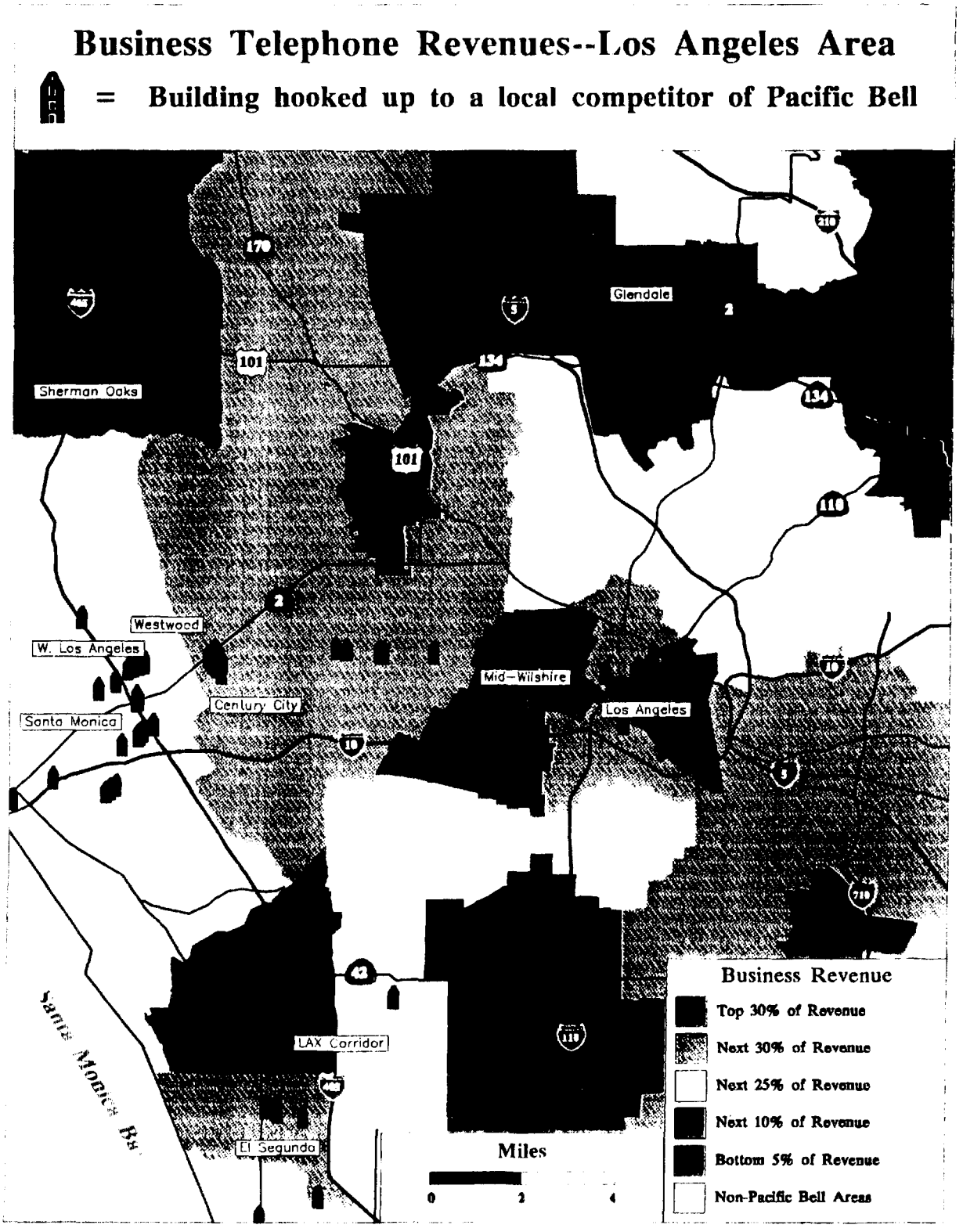

Business Telephone Revenues--Los Angeles Area
= Building hooked up to a local competitor of Pacific Bell
Glendale
Sherman Oaks
Westwood
W. Los Angeles
Century City
Santa Monica
Mid-Wilshire
Los Angeles
LAX Corridor
El Segundo
Santa Monica Bay
Miles
0
2
4
Business Revenue
Top 30% of Revenue
Next 30% of Revenue
Next 25% of Revenue
Next 10% of Revenue
Bottom 5% of Revenue
Non-Pacific Bell Areas

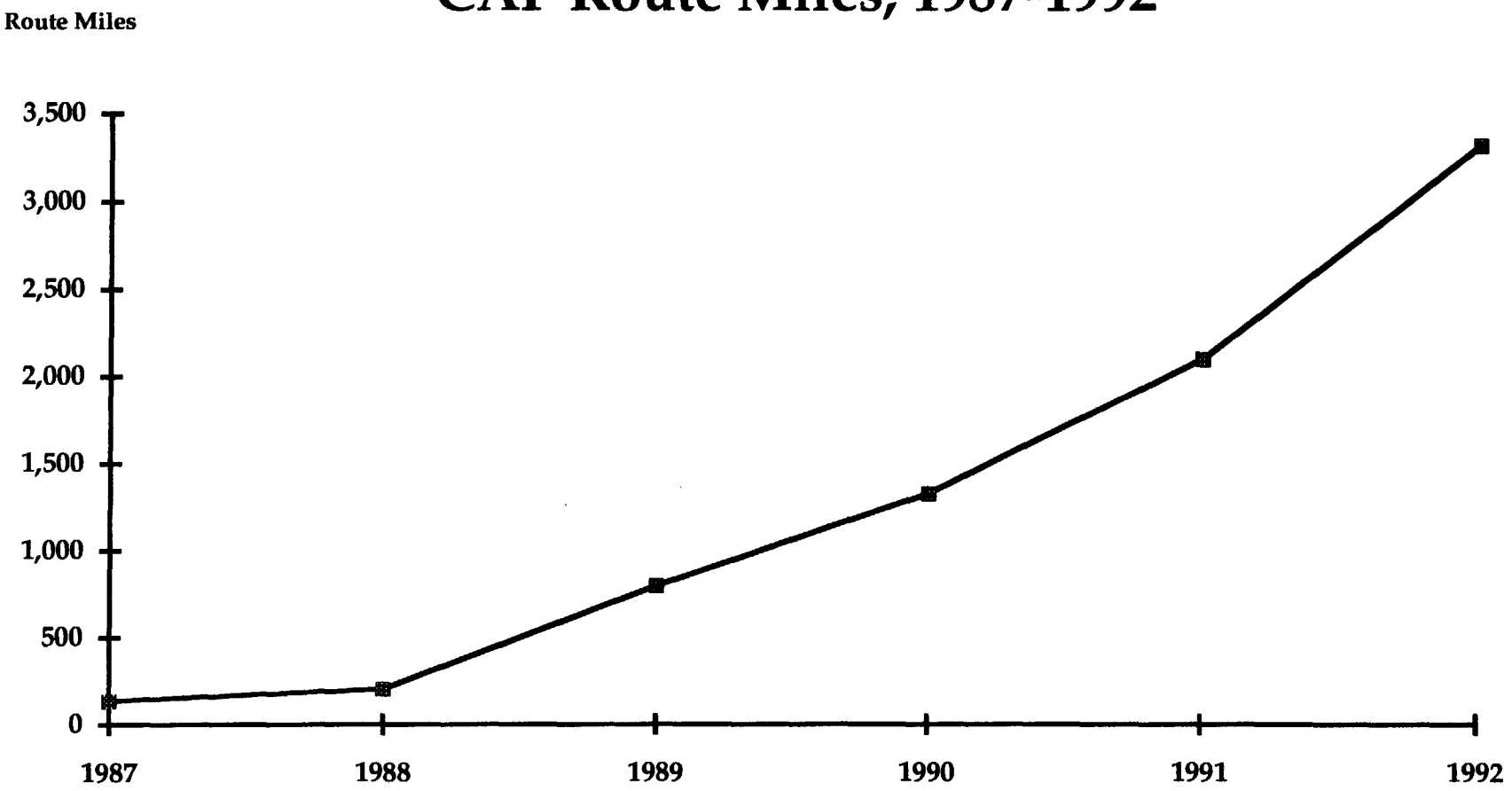
Table B-5:

CAP 1992-1993 Revenue Growth by Source

Revenue Source	1992-1993 % Growth
Access	24%
Systems Integration	52%
Switched Services	400%
Other Telecom	314%
Total Revenue	43%

Source: Connecticut Research

Figure B-5:
CAP Route Miles, 1987-1992



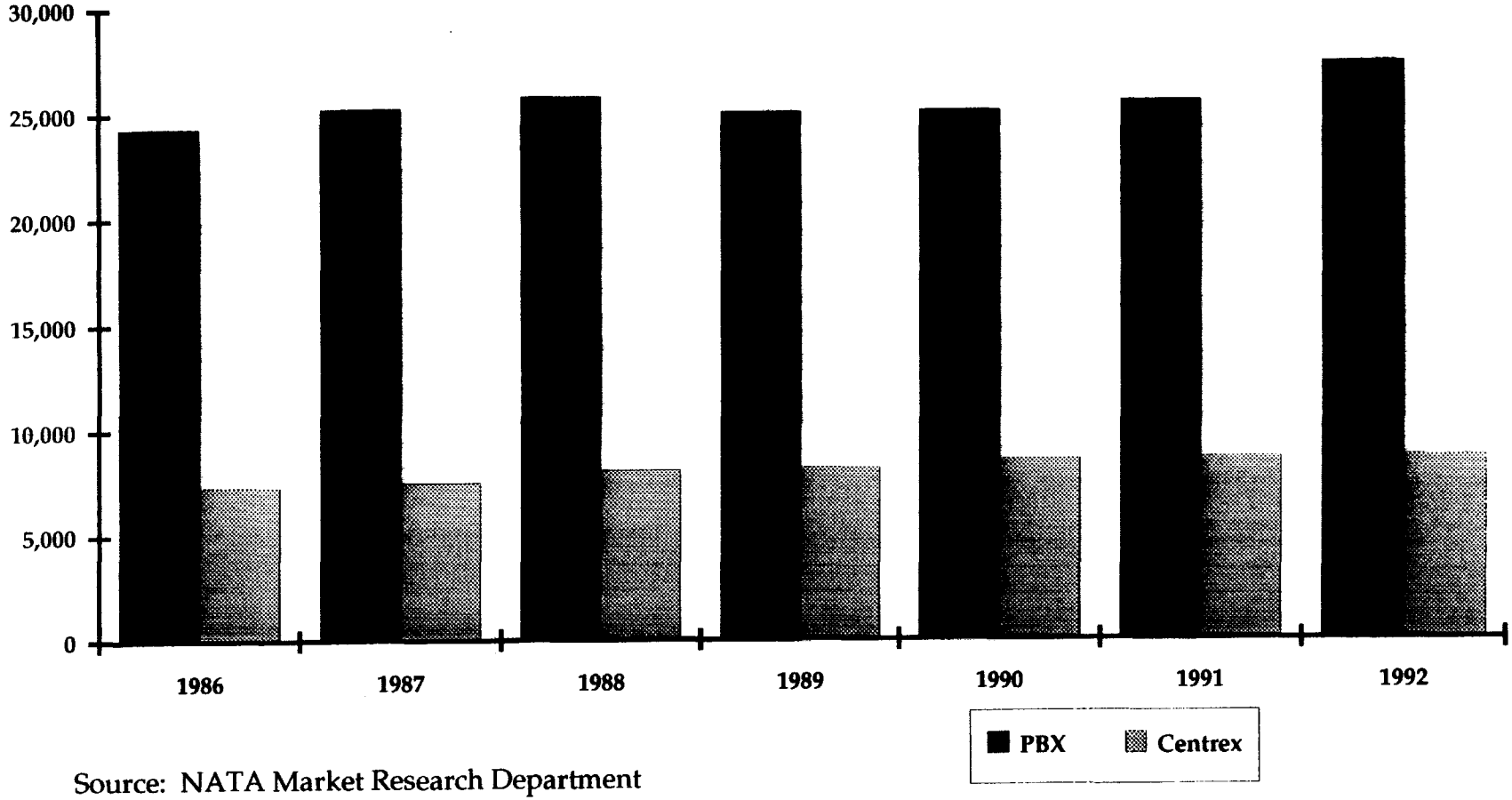
Source: FCC Fiber Deployment Update, End of Year 1992

Table B-6:
CAP 1992-1993 Revenue Growth by Company

Company	1992–1993 Growth
MFS Communications	24%
Teleport Communications Group	50%
IntelCom Group	368%
LOCATE	25%
Eastern TeleLogic Corp.	10%
Bay Area Teleport	-20%
Intermedia Communications of Florida	14%
PacNet	79%
Electric Lightwave	40%
Time Warner Communications	33%
City Signal	150%
Linkatel Communications	79%
Penn Access	50%
FiberNet	100%
PSO MetroLink	20%
Associated Communications of L.A.	67%
Metrex Communications Group	200%
MWR Telecom	50%
Phoenix FiberLink	250%
FiveCom	100%
Start Ups and Others:	100%
Totals	43%

Source: Connecticut Research

Figure B-6:
PBX-Centrex Installed Base, 1986-1992



Source: NATA Market Research Department